

WHAT IS CLAIMED IS:

1. A semiconductor device package, comprising a base portion, a semiconductor die electrically mounted on the base portion, a lead electrically coupled to the die, a perimeter wall snap fitted to the base portion and an encapsulant filling at least a portion of the space within the perimeter wall and encapsulating the die and a portion of the lead.
2. The package of claim 1, wherein the semiconductor die includes a top surface and a bottom surface opposite of the top surface, the top surface comprising a top electrode, the bottom surface comprising a bottom electrode, and the bottom electrode is soldered to the base portion, and the lead is soldered to the top electrode, such that the lead, the die and the base portion are electrically connected.
3. The package of claim 1, wherein the perimeter wall includes an inwardly extending bulge positioned at a lower portion of the perimeter wall such that the bulge snap fits to the base portion.
4. The package of claim 3, wherein the base portion comprises a base shelf having a base sidewall and an intermediate shelf on the base shelf, the intermediate shelf having an intermediate sidewall including a recessed portion, the intermediate shelf being configured such that the bulge of the perimeter wall snap fits onto the recessed portion of the intermediate sidewall.
5. The package of claim 4, wherein the base portion further comprises a retaining structure, the retaining structure being configured such that the retaining structure is surrounded by the perimeter wall without contacting the perimeter wall and is encapsulated, wherein the encapsulant is secured to the base portion.

6. The package of claim 5, wherein the base portion is comprised of a nickel plated copper.

7. The package of claim 6, wherein the base portion further comprises an attachment lug, such that the attachment lug extends from the base portion in a direction away from the lead.

8. The package of claim 7, wherein the attachment lug is threaded.

9. The package of claims 2, wherein the lead comprises a lower portion coupled to the top electrode of the die and a stem portion joined to the lower portion.

10. The package of claim 9, wherein the lower portion of the lead is comprised of copper or a copper alloy.

11. The package of claim 10, wherein the stem portion of the lead is comprised of iron or an iron alloy.

12. The package of claim 11, wherein the lower portion and the stem portion of the lead are joined by capacitance discharge soldering using an eutectic solder.

13. The package of claim 5, wherein the retaining structure is configured such that rotation of the encapsulant in relation to the base portion is prevented.

14. The package of claim 3, wherein the perimeter wall is comprised of a composite material formed into an annular shape.

15. The package of claim 14, wherein the composite material is polyphenylsulfide reinforced by glass fibers.

16. The package of claim 15, wherein the glass fiber comprises about 40% of the composite.

17. A semiconductor device package, comprising:

a base portion comprising an upper surface, a lower surface opposite of the upper surface and a sidewall extending between the upper surface and the lower surface, a portion of the sidewall defining a recessed portion;

a semiconductor die having a bottom surface electrically mounted on the upper surface of the base portion and having a top surface opposite of the bottom surface;

a lead electrically mounted on the top surface of the die such that the lead forms an electrical terminal for the package;

a perimeter wall including a lip extending inwardly from the perimeter wall such that the lip is capable of being snapped into the recessed portion of the base portion, securing the ring to the base portion; and

an encapsulant filling at least a portion of the space within the perimeter wall, encapsulating a portion of the lead and the die.

18. The package of claim 17, wherein the base portion further comprises a threaded extension, and the threaded extension extends in a direction normal to the lower surface.

19. The package of claim 18, wherein the perimeter wall is annular and the recessed portion is a radially cylindrical groove.

20. The package of claim 18, wherein the base portion is comprised of a nickel plated copper, the annular ring is comprised of a composite of polyphenylsulfide reinforced by glass fibers, and the lead comprises a lower portion of copper or a copper alloy mounted on the top surface of the die and a stem portion of iron or iron alloy joined to the lower portion by an eutectic solder.